



Chapter 3

Protecting and Managing Open Space in the Watershed

Introduction

This chapter describes what can be done to protect and manage open space in the watershed. There are five sections:

Stakeholders: Who are the public and private groups that can help accomplish an open space plan?

Development Regulations: What are the first steps necessary for the protection of a watershed?

Planning and Zoning: What local actions can be taken to implement overall open space policies?

Land Preservation Options: What tools are available to actually preserve land?

Best Management Practices and Programs: What are specific actions individuals and public groups can take to implement and manage an open space plan?

Land Trust: A non-profit, tax-exempt organization created to preserve open space, including holding conservation easements. Land trusts promote conservation awareness through environmental education, public policy advocacy, and other means.

Figure 3.1: This Abbott Laboratory facility on 22nd Street in North Chicago was flooded in 1986. WDO flood conveyance and floodplain storage requirements are designed to keep flood damage of structures from worsening.



Stakeholders and Other Interested Parties

The following specific groups and jurisdictions have a major interest in the future of the North Branch watershed and in many cases have contributed to the creation of the open space plan.

- Municipalities*
- Townships
- Park Districts
- School Districts
- Lake County
- Cook County
- Illinois Department of Natural Resources (IDNR)
- Illinois Department of Transportation (IDOT)
- Friends of the Chicago River (FOCR)
- Lake County Stormwater Management Commission (LCSMC)
- Drainage Districts (Skokie, Middle Fork, Union #1 West, Union #1 Middle)
- Lake County Forest Preserve District (LCFPD)
- Forest Preserve District of Cook County (FPDCC)
- The Nature Conservancy
- Openlands Project
- **Land Trusts** (Lake Bluff/Lake Forest Open Lands)
- Private Landowners/Businesses

*Municipalities are the key local unit of government most responsible for open space protection within their respective jurisdictions in the North Branch watershed since most of the watershed is incorporated. Municipalities engage in comprehensive land use planning and zoning, and municipalities approve development proposals.

Open Space Protection Tools: Policy, Planning and Zoning

Policy

A number of regulations are already in place that help reduce the negative impacts of development in the North Branch watershed:

Floodplain and Floodway: Development in these areas is governed by the Lake County Watershed Development Ordinance (WDO), which has been delegated regulatory responsibilities by the state IDNR. The WDO regulates development to minimize impacts to flooding and water quality and protect the natural drainage system. This ordinance has been in place since 1992 for the Lake County portion of the North Branch. Included in the WDO are regulations regarding floodplain and floodway development, wetland preservation and mitigation requirements, and buffer regulations for streams and wetlands.

Lake County Watershed Development Ordinance (WDO)

The WDO regulates development countywide in Lake County. It was first passed in 1992, and substantive amendments were made in 1994 and 2001 when the regulation of isolated wetlands was added. Ordinance provisions that support preserving open space include:

- *Avoidance of wetland impacts:* Where impacts cannot be avoided, there is a minimum requirement to mitigate impacts to “isolated” wetlands that exceed 0.25 acres. A mitigation ratio of 1.5:1 is required, but this rises to 3:1 for impacts to high quality aquatic resources. Preservation of wetlands and mitigation for impacts helps preserve water storage, infiltration, evaporation, and transpiration areas. Protected wetland areas, their buffers and mitigated wetlands are then permanently deed-restricted.
- *Floodway protection:* Floodways must be maintained as open space to convey floodwaters. Only “Appropriate Uses” are allowed within the regulatory floodway. These uses are specified in the WDO and are limited to items such as storm/sanitary sewer outfalls, underground or overhead utilities, playing fields and trail systems.
- *Floodplain development:* Construction in the floodplain is discouraged and has to meet the following provisions.
 - a. Structures built in the floodplain are required to have a lowest floor elevation that is at least 2 feet above the 1% chance flood recurrence interval elevation, the 100-year or Base Flood Elevation (BFE).
 - b. Fill activities in the regulatory floodplain require the creation of compensatory storage to preserve floodplain storage volume. The WDO requires 1.2 cubic yards of compensatory storage, or excavation, for every 1.0 cubic yards of floodplain fill.
 - c. The land located directly adjacent to the regulatory floodplain is considered “Flood Table Lands” if the ground elevation is within two feet of the BFE. The lowest floor elevation requirements also apply to structures constructed in the Flood Table Lands.
- *Water quality:* Provisions include stormwater treatment practices and native plant buffer requirements (ranging from 30–100 feet along riparian corridors and around wetlands) to help keep water clean.
- *Run-off reduction:* Recommendations for new development include a runoff reduction hierarchy that encourages conservation development practices such as:
 - a. preservation of natural resources such as floodplain, wetlands, prairies, woodland, stream corridors;
 - b. minimizing impervious cover; and
 - c. preservation of the natural infiltration and storage characteristics of the site.

As recently as the 1980s entire sections of the North Branch channels were still being rerouted for development. For example, the West Fork was relocated as part of the Bristol Estates subdivision in Deerfield, directly north of the Edens Spur.

Wetlands: Wetlands are regulated by permit requirements focused on preserving the function and values of existing wetlands and streams. The U.S. Army Corps of Engineers (USACE), IEPA, and, SMC have responsibility to protect existing wetlands. Wetlands restoration may be required to mitigate wetland losses allowed by permit.

Riparian Buffer Requirements: Buffer requirements provide for a vegetation buffer along lakes, streams, and wetlands to improve water quality and provide wildlife habitat. While many lakefront communities have setback regulations to protect ravines, few have adopted local ordinances to protect stream banks and provide

Green Infrastructure: *The natural resources that help maintain the health, safety, and ambience of a community in similar fashion to the built environment, and that serve to protect the economic status, health, and welfare of all within the community.*

wider buffers. Many sections of riverbank still consist of mowed grass, such as the Skokie River where it passes through the Great Lakes Naval Training Center. Weedy and non-native plants that do not provide as effective riparian cover as native vegetation also largely dominate the banks of the North Branch system.

Planning

Green Infrastructure: Municipalities must begin to plan and budget for their green infrastructure, just as they do for their traditional infrastructure of sewers, roadways, and the like.

Green infrastructure is an interconnected network of protected land and water that supports native species, sustains air and water resources, and protects ecologically-important lands as well as significant local esthetic resources. Green infrastructure must be identified and protected before development begins, and funded up-front as a primary public benefit, just as roadways, sewer projects, and water lines are. Green infrastructure is the framework for conservation development.

Community Open Space Plans: These are regional (NIPC, Greenways and Trails–1992, 1997) and municipal plans specifically designating linear open space and/or natural areas to preserve significant natural features and accommodate aesthetic, recreational, and/or transportation uses, including trails. To date the bulk of existing trails and greenways have been created by the forest preserve districts, land trusts in Lake Bluff and Lake Forest, and the LCDOT through the use of U.S. Transportation Enhancement Act funds.

- *Open Space Plans:* This report found no communities with formal open space plans, although this issue did figure generally in several comprehensive plans (Glenview, Northbrook). Lake Forest and Lake Bluff, largely through the efforts of their local land trusts, have informal “plans” which amount largely to those land trusts pursuing open space opportunities through the private sector.
- *Greenway Plans:* Highland Park appears to be the only community with a formal greenway plan, although Glenview specifically touches on this subject in its comprehensive plan.
- *Trail Plans:* Bannockburn, Highland Park, and Lincolnshire provided this study with specific local trail plans, and North Chicago has an unofficial regional trail proposal.

These plans should also urge the adoption of intergovernmental agreements to coordinate the protection and restoration of open space/trail/greenways areas.

Zoning

Floodplain Zoning: These are regulations established to protect stream corridors and floodplain from development and other encroachments. Several municipalities in the North Branch specifically prohibit any floodplain development: for years Lake Forest had such an ordinance without, at the time, any real jurisdictional backup. Today the Lake County WDO appropriately restricts and controls this matter.

Open Space Zoning: Some communities are taking a lead from Lake Forest's early example by proposing open space zoning within their jurisdictions. The plan commission of Highland Park has been considering implementing an open space zoning classification.

Open Space Zoning Overlay: All high priority open space parcels automatically trigger a zoning overlay that includes development standards for maximizing open space on the parcel. The zoning overlay standards provide enhanced leverage to the municipality in site plan negotiations.

Impervious Area Reduction: These are regulations requiring reduced street widths and building setbacks and encouraging alternatives to traditional parking lot and building design. These are practices that reduce polluted runoff, thereby protecting the quality of adjacent and downstream open space parcels. They allow communities to have, for instance, more narrow streets that still provide proper access. To date few municipalities have adopted these, since traditional engineering practices and long-standing public safety (police/fire) policies regarding wider access to all developed areas still hold sway. Some communities also promote the reduction in impervious surfaces by granting developers "structural facility size reduction" credits, which encourage the use of non-structural water management practices on new sites.¹

Lastly, some communities also promote the use of porous pavement: permeable or perforated paving materials that allow water to percolate through and be stored in the aggregate base, thus slowing runoff. These materials are questionable in the North Branch watershed, however, due to seasonal freezing of the aggregate, causing heaving, and the low permeability of the clay subsoil beneath the paved area.

Conservation Development: Also called conservation land planning or conservation design, this form of land development can be "institutionalized" by a municipality through the zoning process.

Nationwide, many communities are now embracing this concept under the name Better Site Design (BSD). This concept was formalized at a National Site Planning Roundtable created by the Center for Watershed Protection in 1997. BSD techniques incorporate development principles designed to reduce impervious cover, minimize site clearing and grading, and preserve native vegetation. Under a BSD program, a municipality can require or encourage a developer to do site planning and design that preserves existing natural areas and uses naturalized drainage and detention measures for stormwater management. For instance, a decade ago Lake Forest amended its zoning code with an overlay map showing lands on which the municipality strongly encouraged developers to cluster structures and save natural

Development Standards Can Preserve Open Space

The Town of Caledonia west of Racine, for instance, is currently working on a new plan that would require new and creative development standards specifically to protect certain natural resources — in this case, the few blocks of woodlands remaining in that largely-agricultural area.

Sidebar

The Good and Bad of Streets

Mettawa considers itself a rural community, yet several years ago required a cul-de-sac turnaround nearly 100 feet wide and completely paved in a new subdivision, over the objections of the developer who wanted to install a "green" island. Yet several other municipalities such as Lake Forest have allowed reduced rights-of-way (from 66' to 50') in conservation subdivisions.

Sidebar

Conservation Design: Development that considers the natural landscape of a site and protects natural features as part of the design process. Such designs provide flexibility in lot size, protection of natural areas, impervious surface reduction and, as far as landscape architecture has developed this craft to that moment, state-of-the-art stormwater management and pollution and water runoff controls.

¹ See Maryland's *Stormwater Design Manual* and Pennsylvania's *Handbook of Best Management Practices for Developing Areas*.



Figure 3.2: *Prairie Crossing, a conservation community in Grayslake, IL preserved more than 60% of the community as protected open space to be enjoyed by all residents.*

features. Such ordinances can also include density bonuses for good site design and/or a promise of rapid review of a conservation land plan through the approval process.

Four steps are suggested for integrating conservation development into the North Branch:

1. Update community comprehensive plans to reflect a commitment to conservation design goals
2. Ensure conservation design is encouraged in community zoning and subdivision ordinances
3. Ensure all other ordinances (storm-water/wastewater, landscaping, tree preservation, etc.) are consistent with conservation design goals
4. Ensure cooperation with and understanding of conservation design from other agencies involved in a community's growth²

Conservation land planning is now used nationwide as a major tool to protect natural resources. The underlying density allowed on a property is rearranged in the development plan to protect natural resources. Some communities allow density "bonuses" (more units) as an incentive, but conservation design is generally less costly than traditional design, so density bonuses may not be necessary.

Development Proposal Process: Communities can "leverage" open space protection in the pre-annexation and pre-application process for development proposals within their jurisdictions. Development proposals for high priority open space parcels should trigger community action to negotiate an open space dedication and/or alternative site designs that maintain a significant percentage of the parcel as protected open space. For this practice/policy to be an effective tool, a community needs to have open space priority parcels flagged on all community land use/development maps.

Land Preservation Options

Another key tool for accomplishing the open space plan is the many options available for preserving land. All the following should be used as tools for preserving the remaining open space in the North Branch:

² For greater detail see *Conservation Design Resource Manual*, NIPC, March 2003.

Purchase

Outright: This remains the most frequent and time-tested mechanism in use. There are two outstanding examples of this in the North Branch watershed. The Lake County Forest Preserve District has received over \$100 million in the last fifteen years through three highly successful public referenda, and used part of these funds to buy over 600 acres in the North Branch watershed. Earlier, the Libertyville Township Open Space District passed a referendum issuing bonds for open space preservation in that township, a portion of which were used on the western edge of the North Branch watershed.

On the other hand, the Forest Preserve District of Cook County has not sought public approval for any land acquisition. As a result, this body has bought no land in the North Branch watershed in several decades.

Individual municipalities and park districts have also had some success in this area. Land trusts purchase land as well: Lake Forest Open Lands has spent over \$20 million on land deals to protect open space in that city. (These funds were subsequently recovered through “limited development”; see description following.)

Bargain Sale: A bargain sale is the sale of land below fair market value. The difference between the fair market value and the actual price may qualify as a tax-deductible donation. Persons wanting to preserve land but still needing some return on the sale frequently use this mechanism.

Installment Sale: An owner may choose to sell a portion of land yearly rather than all at once, usually to lessen the impact of capital gains tax or to take full advantage of the charitable gift benefit if the owner has modest income and must therefore absorb the tax advantages over a long period of time.

Right of First Refusal: Any prospective buyer may obtain the right (usually by purchasing it for a nominal fee) to have the “first chance” at an open space parcel when it is offered for sale at some future date. This effectively gives the buyer some control over a parcel, and also buys time to raise funds for this goal.

Option: An “option” is an agreement that is purchased by a prospective buyer giving him/her the option to buy the land under the terms of the agreement during the option period. Normally the cost of the option is seen as a deposit and credited toward the purchase. Options are often used when the buyer really wants the land but needs time to put together financing or consider other purchases.

Conservation Buyer: Occasionally land trusts and other conservation groups will find a person who is willing to buy a parcel, restrict its future development, and take advantage of the resultant charitable gift such as a conservation easement or donation of part of the property to the land trust. The buyer in effect is a partner and agent

Local Successes

- The Village of Winnetka recently received public approval to buy some open space from Loyola University,
- 2001 the City of Lake Forest won public approval to purchase 20 acres on its west side for a public park.
- Lincolnshire recently purchased 54 acres at the corner of Everett and Riverwoods Roads and has created an entirely new park and natural area.
- Glenview preserved a large remnant prairie in the redevelopment of the Glenview Naval Air Station.

for the land trust, sharing the same conservation interests and willing to help fund their goals.

Donation

Land may be given to a qualified organization and the value taken as a charitable gift. Land may also be donated through a will after the landowner dies, reducing estate taxes.

Conservation Easement

This is a widely used tool in the Chicago region, including the North Branch watershed. A private landowner places a permanent restriction on the future use of land in the form of a conservation easement, which effectively is an attachment to the property deed stating the land (or a portion thereof) will remain as open space forever. As a result the landowner could reap significant reductions in property taxes as well as a substantial charitable gift applied towards federal income tax. A qualified conservation body, such as a land trust or public agency dedicated to open space preservation, will accept the conservation easement gift as a tax-deductible gift.

In rare instances a conservation easement may be given with a specified expiration term, for example 20 years. In such instances however the donor cannot take advantage of the tax consequences described above.

Conservation easements can also be placed in escrow. If a number of landowners are considering conservation easements they can each “pledge” the easement in escrow. Their individual easement will become binding only after all parties have done the same, and all easements are then recorded at the same time and become permanently binding.

Lastly, conservation easements can be purchased as well.

Life Estate

Landowners may designate their property for permanent preservation during their lifetime by donating it to a conservation group or government entity, but retain lifetime use of the property. The owner may thus take immediate tax advantage of the charitable gift, yet enjoy the land until it passes to permanent conservation on his or her death.

Charitable Remainder Trust

Income-producing property may be donated to a charitable group during the landowner’s lifetime, and the landowner can continue to receive the income from the property. Upon the landowner’s death the income-producing assets in the property also pass to the charitable group.

Purchase of Development Rights (PDRs)

Successfully used by Libertyville Township in 1986 (and currently being used in Kane County), this technique compensates landowners for a portion of the equity

in their land while leaving actual ownership in their hands. If the land is vacant, residential, or being used for farming, but qualifies for more intense uses, the value of this difference is used to determine the purchase price of the development rights. The land subsequently remains in private ownership but must also, by deed restriction, remain in its current use.

Transfer of Development Rights (TDRs)

This technique has been successfully used in other parts of the United States, beginning in the 1980s in the rapidly growing Montgomery County, MD area. Property rights inherent in property ownership are divided between the property's natural condition and those associated with its development potential. By severing the development rights (credits) from the natural land, a commodity is created that other landowners may trade or purchase.

Zoning ordinances or by-laws may provide for special permits authorizing the transfer of development rights within or between districts. These ordinances may include incentives such as increases in population density, intensity of use, and amount of floor space or percentage of lot coverage, all to encourage the TDRs to protect open space. However, sufficient lands must be available (up-zoned or "receiving" areas) to create a market for other landowners to buy the development rights from the downzoned, "sending" areas.

Such a situation may no longer be possible in the North Branch watershed due to current zoning and the probable lack of receiving areas. This issue and others related to TDRs all require a strong planning and zoning framework at the local municipal level.

Open Space Trading

This is difficult to do in a largely developed watershed such as the North Branch, but provides for a municipality or other entity to trade an existing parcel of open space for development to preserve a more desirable piece of open space elsewhere. Private groups such as The Nature Conservancy and Openlands Project operate such "trade lands" programs.

Limited Development

Used to date largely by land trusts and other non-profit entities, this technique shows great promise in communities that can organize themselves to protect their natural resources. Under this scenario, a local land trust or other non-profit entity acts as a developer, purchasing land from willing sellers. Instead of developing the land to its maximum profit, however, the land trust will develop only enough of the parcel to recoup its investment. It then keeps the rest of the land, which would normally have been developed as well and sold as cash profit, as permanent open space for the community.



Figure 3.3: A portion of the historic Elawa Farm was developed with homes to provide funding for Lake Forest Open Lands to preserve higher quality natural areas such as this oak savanna as open space."

Limited development differs from cluster or conservation development in that the developer, a non-profit group itself, develops only enough land to break even — usually about 50% of the units allowed by the underlying zoning. Cluster housing, in contrast, is profit-driven and simply clusters the full density on a smaller portion of the land. The non-profit developer instead takes this cash profit as additional open space.

In the North Branch watershed, the Lake Forest Open Lands Association has protected over 200 acres of land in this fashion over the last 15 years.

Open Space Act

This Illinois law allows persons owning 10 acres or more to have their property taxes reduced by having their land assessed as open space rather than the “highest and best use,” as long as their land continues to be used for open space purposes (woodland protection, hobby farm, etc.). There is no permanent protection for the land, however, and there is some tax recapture if the land is later developed. Still, this program does provide an interim solution to slow down the development process.

Preferential Treatment of Common Areas

This Illinois law encourages open space in residential developments, and would be useful for new efforts in this area. Eligible land is reduced for assessment purposes to \$1.00/year.

Preservation Options Summary

It should be noted that all of the above land preservation options require legal advice, and that every landowner situation will be different. These are tools used to tailor a land conservation plan to a landowner’s wishes and needs.

An individual or group that understands land preservation and management needs, can see or create opportunities, and can contact and work with landowners on a long-term basis is essential. It is not unusual for a land preservation deal to take five or ten years to accomplish. Success requires a constant eye on many variables and constant attention to and visits with landowners. Building a land preservation program requires much time and constant focus on relationship building.

Noteworthy

Local Landscape Management

Lake Forest still fines people for not removing elm trees afflicted by the Dutch Elm Disease, even though most specimen trees have already succumbed to this disease. However it does nothing to encourage homeowners to remove buckthorn and other noxious plants. Riverwoods, on the other hand, will provide matching funds up to \$1000 for homeowners to replace invasive plants with native species.



Figure 3.4: Lot Level: Micro-detention, a series of “cascading” wetlands handles final subdivision storm water runoff (Portland, Oregon, © 2003, S. Christy)



Figure 3.5: Lot Level: Micro-detention area in the heart of a neighborhood slows and cleans runoff even at low-flow periods (Portland, Oregon, © 2003, S. Christy)

Best Management Practices/Programs (BMPs)

Best Management Practices (BMPs) are the “nuts and bolts” of actually implementing and managing an open space plan that improves the health of the entire watershed. Many of these items are covered in detail in the Watershed Plan for both programmatic and site-specific situations. Others have been gathered from projects around the country. All are briefly described below, followed by a chart showing which entities (homeowners, businesses, municipalities, etc.) might make best use of them.

1. Manage open space at a lot level (homeowners)
 - Dedicate land as a “buffer” along greenways or natural areas, particularly if the land is a partially open parcel as identified in this report
 - Replace lawns with native landscaping to improve infiltration and reduce herbicide and pesticide use
 - Remove non-native and aggressive native plants and replace with native trees, grasses and flowers to create prairie and savanna areas for wildlife habitat and water infiltration
 - Create “rain gardens” and other micro-detention areas to collect lot runoff and help it infiltrate on-site
 - Disconnect downspouts to help rooftop runoff infiltrate on site
 - Adopt municipal codes promoting removal of non-native plants and their replacement with native species
 - Consider “green roofs,” a planted roof system designed to capture and temporarily store water on rooftops

Best Management Practices (BMPs) Practices principally applicable to construction sites, parking lots, and new developments that reduce pollutant levels and/or the volume of stormwater that runs into storm drains, treatment facilities and waterways.

Figure 3.6: Rain gardens such as this native plant swale located between two homes in Prairie Crossing can be used to collect and infiltrate runoff from adjacent home and business roofs, sump pumps and parking lots.”



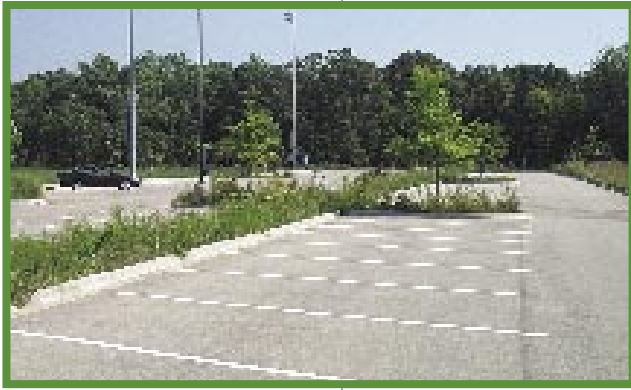


Figure 3.7, 3.8: Northpark, Lincolnshire curb cuts drain parking lot runoff into bioswales that infiltrate stormwater and filter pollutants, while native landscaping around athletic fields not only infiltrates runoff and is low maintenance, but also provides habitat for birds, butterflies and other creatures.

2. Manage open space at a community level (municipalities/park districts)
 - Organize community-wide natural drainage systems in subdivisions, using:
 - a. filter strips: areas of dense native plants to absorb runoff
 - b. level spreaders: trenches laid on the contour to disseminate runoff
 - c. vegetated swales: heavily-planted stormwater conveyances that retain, cleanse and absorb runoff
 - d. bioswales: similar to the above but having an infiltration trench of rock or other porous material installed below a vegetated swale
 - Promote community-wide stabilization of stream and detention basin banks.
 - a. work with drainage districts on solving erosion problems along streams that run through backyards, industrial/commercial areas, and public parks and golf courses
 - b. retrofit and naturalize detention basins to provide better habitat and water quality control, including sediment capture
 - Implement community-wide educational and awareness signage.

Noteworthy

Corporatelands Program

Openlands Project is the latest in a long line of promoters of this concept which promotes converting large areas of turf grass on corporate campuses to native landscape. In the 1970s the “front lawn” at the Kemper Insurance headquarters in Long Grove was actually a large restored prairie, but a new CEO did not like the appearance and had it converted to mowed grass!

3. Manage open space at a regional level (forest preserves, corporate campuses, land trusts, drainage districts, etc.)
 - Encourage public and private golf courses to participate in the **Audubon Cooperative Sanctuary Program (ACSP)**
 - Continue to buy and otherwise set aside more permanent open space, especially wetlands and floodplains
 - Undertake large-scale streambank and wetland restoration projects
 - Restore large forest preserve areas using native trees, shrubs, grasses and flowers, and aggressively manage them (burning, etc.) to promote maximum native growth and suppress non-native species
 - Reduce lawn areas at corporate campuses and replace with native grasses and flowers
 - Restore biodiversity and wetlands by creating new, large-scale floodplains planted to native landscapes

Audubon Cooperative Sanctuary Program (ACSP) The ACSP is designed to help a golf course take advantage of its natural resources through environmental planning, wildlife and habitat management, water conservation and water quality management, chemical use reduction, and public outreach and education. Since 1991, the program has helped to “naturalize” over 2,300 golf courses.

Noteworthy

Creating New River Landscapes

Since the three forks of the North Branch were all lowered 4–6 feet decades ago when ditched, some have long argued that the only way to reproduce original riverine habitat would be to lower the floodplains as well. In 1997 the Lake Forest Open Lands Association, using 319 funds, did just this in a “demonstration project” along 2000 feet of streambank on the Middle Fork. Nearly 10,000 cubic yards of earth were removed and new riverbanks at up to a 20:1 slope created and seeded to native grasses and flowers.

There remain today extensive areas in the watershed where similar, large-scale restorations could occur, recreating native floodplains and providing additional flood storage. In early 2003, in fact, the Milwaukee Metropolitan Sewerage District (MMSD) began such a project in Wauwatosa, lowering a large section of the floodplain by three feet.

Figure 3.9: Riverbank restoration (Melody Farms Nature Preserve, Lake Forest, Illinois, 1997, © Lake Forest Open Lands Association)



Table 3.1 Open Space Management Tool Applicability

Tools	Scale of Use			
	County/Watershed	Municipality/ Township/ Subwatershed	Neighborhood/ Catchment	Single Lot
Regulations				
Floodplain and Floodway	X	X		
Wetlands Restoration/Management	X	X	X	X
Riparian Buffers	X	X		
Land Preservation Options	X	X	X	X
Policy, Planning and Zoning				
Green Infrastructure	X	X	X	
Conservation Development		X	X	
Floodplain Zoning	X	X		
Community Open Space Plans		X	X	
Impervious Area Reduction	X	X	X	X
Best Management Practices				
Local Level				
Dedicate buffers			X	X
Reduce lawn areas			X	X
Remove non-native plants, replace with natives			X	X
Create rain gardens			X	X
Create micro-detention areas			X	X
Disconnect downspouts			X	
Adopt municipal codes promoting native landscapes		X	X	X
Consider “green” roofs				X
Community Level				
Organize community-wide watercourse stabilization efforts	X	X	X	X
Promote community-wide stabilization/retrofit of streambanks and detention basins		X	X	X
Implement educational and awareness signage	X	X	X	
Regional Level				
Encourage Audubon Cooperative Sanctuary Program	X	X		
Buy more permanent open space	X	X		
Undertake large-scale streambank/wetland restoration projects	X	X	X	
Restore forest preserve landscapes	X	X	X	
Convert corporate campus lawns to native plants	X	X	X	X
Create new, large-scale native floodplain landscapes	X	X		

“X” = practices that are applicable to corresponding geographic scale